Application No. 10/549,429
Filed: September 15, 2005
TC Art Unit: 1725
Confirmation No.: 9502

AMENDMENTS TO THE SPECIFICATION

Please amend the following paragraphs of the specification as indicated:

Beginning on page 2, line 9:

However, the cylindrical metallic raw material cannot be directly supplied to a molten metal heating holding cylinder and it is supplied after being completely melted by a melting furnace or it is preheated by a preheating barrel and then heated in a semi-molten state to be accumulated in a heating chamber. Thus a metal molding apparatus becomes a large size and maintenance requires a ~~trouble~~ lot of work.

Beginning on page 2, line 23:

Since such a metal molding apparatus is comprised of a heating holding cylinder and a melting cylinder, it ~~has no~~ does not have a large size and the maintenance becomes easy. However, since the melting of the cylindrical metallic raw material is indirectly performed by radiant heat of a heating means around the melting cylinder, the heating efficiency is worse than in case of a melting furnace, which directly heats the cylindrical metallic

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raw material by contact with molten metal through dropping of the material into the molten metal, and the melting takes much time.

Text beginning on page 11, line 25:

A melting supply device 3 shown in FIG. 4 and the following is comprised of a melting cylinder 1, a funnel-shaped bottom portion 35 connecting to a body portion of the melting cylinder, a center outflow pipe 36 of the bottom portion 35 having a smaller diameter than the body portion, a laterally provided auxiliary heating member 37 of a stainless steel round bar, both ends of which are fixed to a body wall of the melting cylinder 1 in a lower portion of the body portion adjacent to the bottom portion 35, and a heating means 32 provided on an outer circumference of the body portion and the outflow pipe 36. In such a melting supply device 3, a bottom surface of the above-mentioned cylindrical metallic raw material M is partially supported by the auxiliary heating member 37 so that heating of the cylindrical metallic raw material M within the melting cylinder 31 by both radiant heat of the body circumference and contact heating from the bottom surface thereof can be simultaneously performed. Further, the heating means 32 for the melting cylinder 31 is divided into a plurality of zones from the lower side of the

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auxiliary heating ~~member 34~~ member 37 to the upper portion thereof so that it is provided individually in temperature-controllable.

The auxiliary heating ~~member 34~~ member 37 is not limited to one but, although omitted from drawing, a plurality of auxiliary heating members may be laterally bridged in parallel with spaces. Alternatively, as shown in FIG. 6, a plurality of auxiliary heating members may be laterally bridged in a cross intersection. In this case, the cross-shaped auxiliary heating members are inserted from an upper opening of the melting cylinder 31 to a boundary of the bottom portion 35 and it is hung on a body wall of the melting cylinder 31. Further when the heating of the inside of the bottom portion with the auxiliary heating member 37 is positively performed, although omitted from drawing, the auxiliary heating member 37 is formed of a pipe body and a cartridge heater is inserted into the pipe body from a body portion of the melting cylinder 3 so that heating is performed separately from the melting cylinder 31.

Beginning on page 13, line 1:

The cylindrical metallic raw material M is inserted from an upper opening into the melting cylinder 31 heated at a preset melting temperature. The cylindrical metallic raw material M

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drops by self weight through the melting cylinder to a position where a bottom surface of the cylindrical metallic raw material M comes into contact with the auxiliary heating ~~member 34~~ member 37 and is received by the auxiliary heating member 37. Within the melting cylinder, radiant heat of the heating means 32 heats the body circumference and at the same time a line contact with the auxiliary heating member 37 directly heats the center of the bottom surface. When a temperature of the cylindrical metallic raw material M exceeds the solidus temperature, the cylindrical metallic raw material M is softened. Accordingly, the auxiliary heating ~~member 34~~ member 37, which receives a load of the cylindrical metallic raw material M, enters the center portion of the cylindrical metallic raw material M from the bottom surface thereof. Further with the entering of the auxiliary heating ~~member 37~~ member 37, the softened bottom surface of the cylindrical metallic raw material M bulges out on both sides of the auxiliary heating member 37 as shown by a hypothetical line in FIG. 4 and the auxiliary heating member 37 further enters the upper portion of the cylindrical metallic raw material M to heat the center portion thereof. Therefore, the heating of the cylindrical metallic raw material M is effectively performed together with the heating from the body circumference.

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Beginning on page 14, line 6:

Since a distribution condition of the eutectic crystal is not uniform in a metallic raw material of a metal ~~structureexhibiting~~ structure exhibiting thixotropic properties, the melting conditions are also various and the melting is not uniformly performed and a small melt lump can drops from the metallic raw material M. However, since the heated funnel-shaped bottom portion 35 and the outflow pipe 36 are provided at a lower portion of the auxiliary heating member 37, a molten lump is melted down on a surface of the bottom wall and while it passes through the outflow pipe 36 from the surface of the bottom wall, the lump is melted again to be fluidized. Further, when a melt reservoir is generated on the bottom portion 35, the lump sinks in the melt reservoir to be melted again. Thus even if the melt lump is generated, the melting is performed without hindrance and clogging of the outflow pipe 36 by the melt lump is not caused. Accordingly, the melting time of the metallic raw material can be reduced.

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